

REMARKS

Claims 1-21 are pending in the present application with claims 12, 13 and 15-21 allowed and claims 1, 4-11 and 14 rejected in a final Office Action dated August 17, 2001. Applicant hereby files a continued prosecution application with this preliminary amendment amending claims 1, 6, 11 and 14. Reexamination and reconsideration of the claims, as amended, are respectfully requested.

In the final Office Action, the Examiner rejected claim 6 and its dependent claims 7-10 under 35 U.S.C. § 103(a) as being unpatentable over Kohler (U.S. Patent No. 6,140,568) in view of Humphrey et al. (U.S. Patent No. 3,894,186). Applicant has amended claim 6 to recite a scale designation section that selects a scale determining condition and a note determination section that, in accordance with the scale determining condition selected by the scale designation section, determines a particular one of the scale notes. The feature of selecting a scale determining condition is not disclosed in either Kohler or Humphrey et al.

This amendment is identical to the amendment of claim 6 in Applicant's reply dated November 19, 2001 to the final Office Action. Although the after final amendment to claim 6 was not entered, it is respectfully noted that the Examiner indicated in the telephonic interview on November 27, 2001 that the amendment was satisfactory in overcoming the cited references. Accordingly, Applicant respectfully submits that claims 6-10 are patentable over Kohler in view of Humphrey et al.

The Examiner rejected claim 1 and its dependent claims 4 and 5 under 35 U.S.C. § 103(a) as being unpatentable over Kohler. The Examiner also rejected claims 11 and 14 -- which correspond to claim 1 and are directed to a method and machine-readable medium, respectively -- under § 103(a) as being unpatentable over Kohler.

The present invention relates to sound signal analyzing devices. These devices have parameters -- such as volume threshold -- that are used in analyzing an inputted sound signal. In conventional sound signal analyzing devices, these parameters are normally pre-set in advance to

some fixed standard level. This fixed level is suitable for analyzing normal level signals, but does not perform as well for signals whose levels are substantially different from the fixed level.

The present invention overcomes the shortcoming of conventional sound signal analyzing devices by modifying the various parameters based on the actual sound signal received by the device during operation. This is achieved by extracting a characteristic -- such as volume level or upper/lower pitch limits -- of the received sound signal. The extracted characteristic is then used to set a parameter, such as volume threshold, for analyzing the sound signal.

This approach allows for the parameters to be modified in accordance with a user's singing ability, volume or range, because it focuses on extracting a characteristic of the actual sound signal received by the device. As the extracted characteristic of the received sound signal differs so can the parameter that is to be set based upon the extracted characteristic. For example, as the volume level of the received sound signal differs depending on the user, the parameter (volume threshold) can be appropriately altered in accordance with the difference in the extracted characteristic (volume level) of the received sound signal.

Applicant has amended claims 1, 11 and 14 to emphasize that the parameters are set based on the extracted characteristic of the actual sound signal received by the device. Claim 1 recites that an input section receives a sound signal "to be analyzed" and a characteristic extraction section extracts a characteristic of the sound signal "as it is received" by the input section of the device. This amendment emphasizes the parameters are set based on the characteristics of the actual received sound signal by the device as opposed to some standardized or average expected sound signal used to set fixed parameters.

In rejecting claim 1, the Examiner has cited Kohler, which is directed to the analysis of a sound signal rather than setting parameters for that analysis. The brief references in Kohler to the use of thresholds (see col. 5, lines 10-12 and col. 17, lines 18-33) indicates the use of fixed thresholds. Indeed, the Examiner acknowledges that Kohler does not disclose setting parameters based on the extracted characteristic of the received sound signal. The Examiner instead

contends that parameters are not arbitrarily set in sound analyzing devices, but are based on some characteristics of the sound signal. Thus, the Examiner contends it would be obvious to a person of ordinary skill in the art at the time of the invention to set parameters based on some characteristics of the signal.

It is respectfully submitted that the Examiner has not established a prima facie case of obviousness. As the Federal Circuit recently held, "[e]ven when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference." In re Kotzab, 217 F.3d 1365, 1370 (Fed. Cir. 2000). There is no such suggestion or motivation at all in this case. Kohler discloses fixed thresholds based on some normal expected characteristics of vocal sounds produced by ordinary users. Kohler is completely devoid of any suggestion of providing settable thresholds in the device and setting them based on the actual characteristics of vocal sounds produced by actual users. As discussed above, there is a tangible advantage in considering the characteristic of the received sound signal rather than employing a fixed threshold like Kohler and other conventional sound analyzing devices.

Thus, even though Kohler has nothing to do with extracting characteristics of a sound signal to set parameters for analyzing the sound signal, the Examiner has concluded that it would be obvious to modify the fixed threshold device of Kohler into a device in which thresholds are set based on characteristics of the received sound signal. Because there is no motivation at all for the modification contained in Kohler, it is respectfully submitted that the Examiner's rejections is based on impermissible hindsight.

In view of the foregoing, Applicant respectfully submits that all of the rejected claims in the present application are in condition for allowance. If the Examiner feels that it would advance the prosecution of the application, it is respectfully requested that the Examiner telephone the undersigned attorney.

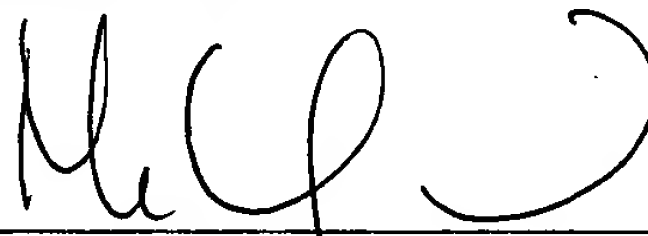
Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with markings to show changes made".

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, Applicant petitions for any required relief including extensions of time and authorizes the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 39303-20094.00. However, the Assistant Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

Dated: January 17, 2002

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

1. (Twice Amended) A sound signal analyzing device comprising:
an input section that receives a sound signal to be analyzed;
a characteristic extraction section that extracts a characteristic of the sound signal as it is received by said input section; and
a setting section that sets various parameters for use in analysis of said [the] sound signal [received by said input section], in accordance with the characteristic of the sound signal extracted by said characteristic extraction section,
wherein said characteristic extraction section extracts at least one of a volume level of the sound signal and upper and lower pitch limits of the sound signal as said characteristic, and
wherein said setting section sets a threshold value for use in the analysis of the sound signal, in accordance with the volume level of the sound signal extracted by said characteristic extraction section, or said setting section sets a filter characteristic for use in the analysis of the sound signal, in accordance with the upper and lower pitch limits extracted by said characteristic extraction section.
6. (Amended) A sound signal analyzing device comprising:
an input section that receives a sound signal;
a pitch extraction section that extracts a pitch of the sound signal received by said input section;
a scale designation section that [sets] selects a scale determining condition; and
a note determination section that, in accordance with the scale determining condition [set] selected by said scale designation section, determines a particular one of scale notes which the pitch of the sound signal extracted by said pitch extraction section corresponds to.

11. (Twice Amended) A sound signal analyzing method comprising the steps of:
receiving a sound signal to be analyzed;
extracting a characteristic of the sound signal as it is received by said step of receiving;
and
setting various parameters for use in analysis of said [the] sound signal [received by said
step of receiving], in accordance with the characteristic of the sound signal extracted by said step
of extracting,
wherein, at said step of extracting, extracting at least one of a volume level of the sound
signal and upper and lower pitch limits of the sound signal as said characteristic, and
wherein, at said step of setting, setting a threshold value for use in the analysis of the
sound signal, in accordance with the volume level of the sound signal extracted by said step of
extracting, or setting a filter characteristic for use in the analysis of the sound signal, in
accordance with the upper and lower pitch limits extracted by said step of extracting.

14. (Twice Amended) A machine-readable medium containing a group of instructions of a sound signal analyzing program for execution by a computer, said sound signal analyzing program comprising the steps of:

receiving a sound signal to be analyzed;

extracting a characteristic of the sound signal as it is received by said step of receiving;

and

setting various parameters for use in analysis of said [the] sound signal [received by said step of receiving], in accordance with the characteristic of the sound signal extracted by said step of extracting,

wherein, at said step of extracting, extracting at least one of a volume level of the sound signal and upper and lower pitch limits of the sound signal as said characteristic, and

wherein, at said step of setting, setting a threshold value for use in the analysis of the sound signal, in accordance with the volume level of the sound signal extracted by said step of extracting, or setting a filter characteristic for use in the analysis of the sound signal, in accordance with the upper and lower pitch limits extracted by said step of extracting.